

8. For an overcontour approach, the best BS value was achieved with an acid etchant, an adhesive system, and microhybrid composite.
9. With the internal groove technique, the highest BS was associated with an acid etchant, an adhesive system, and a microhybrid composite.
10. The dentin groove technique with a shoulder technique had better results when a luting cement resin and a nano-hybrid composite were used.

Hydration and Rehydration

With a well-hydrated fragment, the original color of the fragment can be maintained and BS values can be improved. Studies rehydrated the fragment for periods ranging from 15 minutes up to 24 hours. There was no statistical difference between the 15-minute and the 24-hour results, so limiting rehydration to just 15 minutes would be preferred. Not only does it favor clinical management, but it also partially restores lost resistance.

DISCUSSION

Many factors influenced the final BS results in these in vitro studies. Among these factors were performing sectioning versus producing the fracture using a universal testing machine; maintaining adequate hydration or performing rehydration; and choice of

materials or technique. The decisions made are based on the type of fracture and whether the parts of the tooth adapt well.

Clinical Significance

When faced with the need to restore a tooth fragment to its original place, the dentist should seek to ensure it is rehydrated for 15 minutes. The best choice for a reattachment technique is avoiding any further preparation and using an adhesive system associated with an intermediate composite that offers good mechanical properties. This should provide recovery of some of the strength lost in the fracturing of the tooth.

de Sousa APBR, França K, de Lucas Rezende LVM, et al: In vitro tooth reattachment techniques: A systematic review. *Dent Traumatol* 34:297-310, 2018

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EMERGENCIES

Medical emergencies in a dental practice setting



BACKGROUND

Medical emergencies are not common in dental practices but they do occur often enough that dentists need to be prepared to address them. Both dental practitioners and their teams should be confident and current with their medical emergency management skills if they are to correctly provide the initial care required in an emergency situation. A survey was done to assess the prevalence and incidence of medical emergencies in the dental setting as well as dental professionals' level of confidence, degree of knowledge, and attitudes toward medical emergency management training.

METHODS

A scoping review was undertaken to provide the needed data. The 5 states of the review included identifying the research question, identifying studies, selecting studies, charting the data, and summarizing the results. A total of 24 articles were included, with 16 coming from Asia and 9 of these including 101 to 200 participants.

RESULTS

Prevalence and Incidence of Medical Emergencies in Dental Settings

Data indicated that over half of the dental practitioners currently practicing will be required to perform some type of medical emergency management during their careers. The prevalence of diagnosable medical emergencies was highest for syncope, followed by an epileptic episode and hypoglycemia. Many practitioners were faced with medical conditions that they couldn't diagnose.

The studies showed between 10% and 16% of the dentists have been required to provide urgent care for a serious cardiac event. Dentists were called upon to provide anything from direct patient resuscitation to calling an ambulance for critical patient transport to a hospital. Seventy-seven percent of respondents from the United States faced a patient with at least 1 sign of a cardiac emergency and had dealt with higher rates of unresponsive patients in recent years compared to the past.

Provider Confidence

A dentist's confidence in medical emergency management was found to be directly proportional to the amount of training received in emergency management. Training through simulation provided more confidence than didactic learning. Training was not proportional to a confidence in diagnosing hypertension, diagnosing and treating syncope, or diagnosing angina. The single study of drug usage indicated that about 50% of Croatian dentists were not confident in their ability to use adrenaline or oxygen for pediatric patients with a medical emergency. Only about 35% to 55% exhibited confidence in managing all aspects of common pediatric medical emergencies.

With regard to adult medical emergencies, about a third of Saudi Arabian dental students were worried about performing cardiopulmonary resuscitation (CPR) on a stranger because they feared causing additional harm. Having a higher knowledge of CPR provided greater confidence in implementing this intervention.

Knowledge Levels

Ninety-three percent of German dentistry students in a simulated environment were unable to correctly use oxygen, 46% could not perform CPR correctly, and 47% did not know how to use an Automated External Defibrillator (AED) in a situation that met the indications for use. Senior dentistry students in Saudi Arabia were lacking in knowledge and practice as well, with more than half answering less than half of the questions of a theoretic examination of Basic Life Support (BLS) and related procedures. Less than a third of students in another Saudi Arabian university could identify the correct procedure to help a choking adult.

About a third of dental students in Japan could not take a radial pulse and 22% could not use a pulse oximeter correctly. In addition, just 8% were able to correctly diagnose adrenaline hypersensitivity. Of Iranian general dentists, fewer than 60% knew about the characteristics of hypoglycemia, chest pains of cardiac origin, and the correct method for CPR. In addition, fewer than a third could correctly diagnose adrenal crisis or hyperventilation.

The knowledge level and procedural proficiency of practitioners dealing with emergency medical management were substantially increased when simulation training was provided. However, the time elapsed between taking a BLS course and deterioration of the emergency management skills did not correlate with skill quality. The single study addressing skills deterioration indicated that skills deteriorated rapidly after training. There was no critical time interval before a practitioner returned to his or her baseline level of proficiency. It was suggested that emergency skills should be refreshed more frequently than every 2 years.

Attitudes Toward Emergency Medical Management Training

Nearly 94% of dental students believed that formal BLS training should be a compulsory component of their training. Reasons

for not wanting BLS training included lack of interest, belief that medical emergencies are never encountered in dental practice, and a lack of understanding regarding the need for BLS services. When simulation training was incorporated into medical emergency training, both dentists and students found it valuable. Simulation training was seen as useful in future clinical work and was seen as the best way to convey the needed procedural information. One study addressed respondents' attitudes toward the frequency of the training, with 72% of the dentists surveyed suggesting BLS refreshers be offered at least once every 2 years.

DISCUSSION

The studies in this scoping review identified a lack of preparedness among dental practitioners and dental students related to emergency medical management skills. In addition, dentists' attitudes, levels of confidence, and competence were all lacking in significant percentages of the populations reviewed.

Clinical Significance

It's expected that the prevalence of medical emergencies in dental settings will continue to increase, based on the aging of the population and the increasing numbers of people with chronic illnesses. Dental practitioners need to be prepared to handle these emergencies, whether they affect adult or pediatric patients, and currently it appears that the knowledge, competence, and confidence of both students and practicing dentists are less than they should be. Implementation of simulation teaching of emergency medical management in a dental setting should begin in dental schools and for dental practitioners so that medically compromised patients have the best possible outcome. Practitioners from multiple countries have expressed a desire to improve their skills and knowledge in this area, and educational and professional associations should take note and begin to meet this important need.

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